



150

**PvuI (7)**  
**SgfI (6)**
**MfeI (82)**

1 GGATCTGCGATCGCTCCGGTGCCCGTCAGTGGGCAGAGCGCACATCGCCACAGTCCCCGAGAAGTTGGGGGAGGGGTCGGCAATTGAACGGGTGCCTA  
 101 GAGAAGGTGGCGCGGGTAAACTGGGAAAGTGATGTCGTACTGGCTCCGCCCTTTTCCCGAGGGTGGGGGAGAACCCTATATAAGTGCAGTAGTCGCC

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**Psp1406I (203)**
**HindIII (245)**
**Bsu36I (291)**

201 GTGAACGTTCTTTTTTCGCAACGGGTTTGCCGCCAGAACACAGCTGAAGCTTCGAGGGCTCGCATCTCTCTTCACGCGCCCGCCCTACCTGAGGCC  
 301 GCCATCCACGCGGTTGAGTCGCGTCTGCGCCCTCCCGCTGTGGTGCTCCTGAAGTCCGCTCCGCTTCTAGGTAAGTTTAAAGCTCAGGTCGAGACC

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**NgoMI (441)**

**NaeI (441)**

401 GGGCCTTTGTCCGGCGCTCCCTTGAGGCTACCTAGACTCAGCCGGCTCTCCAGCTTTGCTGACCTGCTTGGCTCAACTCTACGCTTTTGTTTGGTTT

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**AgeI (552)**
**SphI (568)**

501 TCTGTTCTGCGCCGTTACAGATCCAAGCTGTGACCGGCCCTACCTGAGATCACCGGTAGGAGGGCCAGCATGCTACGAGCTTTGGCTCTTCTGGATC  
1▶ M L R A L W L F W I

**BsrBI (683)**

601 TTGGTGGCCATAACAGTCTCTCAGCAAACGCTGTCTGCTCAGGAGTCTCTGTATGTGATGCTTCTGGGGTGTGTATGGCCGCTCCAGGCTTTTCA  
 11▶ L V A I T V L F S K R C S A Q E S L S C D A S G V C D G R S R S F

**BstEII (777)**

**NcoI (773)**

701 CCTCTATTCCTCCGGACTCACAGCAGCCATGAAAAGCCTTGACCTGTCTTCAACAAGATCACCTACATTGGCCATGGTACCTCCGAGCGTGTGCGAA  
 44▶ T S I P S G L T A A M K S L D L S F N K I T Y I G H G D L R A C A N  
 801 CCTCCAGGTTCTGATTTTGAAGTCCAGCAGAATCAATAAGTAGAGGGAGACGCTTTTATTCTGGCAGTCTTGAACATTTGGATTTGCTGATAAT  
 77▶ L Q V L I L K S S R I N T I E G D A F Y S L G S L E H L D L S D N

**Bsp120I (930)**

**EcoO109I (930)**

901 CACCTATCTAGTTTATCTCTCTGTTCCGGCCCTTTCTCTTAAATACTTAACTAATGGGAAATCCTTACCAGACTGGGGTAAACATCGC  
 111▶ H L S S L S S S W F G P L S S L K Y L N L M G N P Y Q T L G V T S

**Bsu36I (1028)**

1001 TTTTTCCAATCTCACAATTTACAACCTCAGGATAGGAAATGTAGAGACTTTCAGTGAAGATAAGGAGAATAGATTTTCTGGGCTGACTTCTCTCAA  
 144▶ L F P N L T N L Q T L R I G N V E T F S E I R R I D F A G L T S L N

**AflII (1187)**

1101 TGAACCTGAAATTAAGGCATTAAGTCTCCGGAATTATCAGTCCCAAAGTCTAAAGTCGATCCGCGACATCCATCACCTGACTCTTCACTTAAGCGAGTCT  
 177▶ E L E I K A L S L R N Y Q S Q S L K S I R D I H H L T L H L S E S  
 1201 GCTTTCCTGCTGGAGATTTTGCAGATATTCTGAGTCTGTGAGATATTTAGAATAAGAGATACTAAGTGGCCAGGTTCCAGTTTTACCAGTCCGCC  
 211▶ A F L L E I F A D I L S S V R Y L E L R D T N L A R F Q F S P L P

**HindIII (1361)**

1301 TAGATGAAGTCAGCTCACCGATGAAGAAGCTGGCATTCCGAGGCTCGGTTCTACTGATGAAAGCTTTAACGAGCTCCTGAAGCTGTTGCTTACATCTT  
 244▶ V D E V S S P M K K L A F R G S V L T D E S F N E L L K L L R Y I L  
 1401 GGAAGTGTCCGAGGTAGAGTTCGACGACTGTACCCCTCAATGGGCTCGGCGATTCAACCCCTCGGAGTCAGACGTAGTGAAGTAAAGTAGAA  
 277▶ E L S E V E F D D C T L N G L G D F N P S E S D V V S E L G K V E

**Scal (1554)**

1501 ACAGTCACTATCCGAGGTTGCATATCCCCAGTCTATTTGTTTATGACCTGAGTACTGTCTATTCCTCCTGGAGAAGGTGAAGCGAATCACAGTAG  
 311▶ T V T I R R L H I P Q F Y L F Y D L S T V Y S L L E K V K R I T V

**EcoRI (1656)**

**SspI (1693)**

1601 AGAACAGCAAGGTTCTCTGGTCCCTGCTGTTCTCCAGCATTTAAATCATTAGAATTCTTAGACCTCAGCGAAAATCTGATGGTTGAAGAAATTTT  
 344▶ E N S K V F L V P C S F S Q H L K S L E F L D L S E N L M V E E Y L  
 1701 GAAGAACTCAGCCTGTAAGGGAGCCTGGCCTTCTACAAACCTTAGTTTTGAGCCAGAATCATTGAGATCAATGCAAAAAACAGGAGAGATTTTCTG  
 377▶ K N S A C K G A W P S L Q T L V L S Q N H L R S M Q K T G E I L L

**PshAI (1857)**

1801 ACTCTGAAAACTGACCTCCCTTGACATCAGCAGGAACACTTTTTCATCCGATGCCGACAGCTGTGAGTGGCCAGAAAAGATGCGCTTCTGAAATTTGT  
 411▶ T L K N L T S L D I S R N T F H P M P D S C Q W P E K M R F L N L

**BamHI (1909)**

1901 CCACTCAGGGATCCGGTGGTAAAAACGTCATTCTCAGACGCTGGAGGTGTTGGATGTTAGTAAACAATCTTGACTCATTTTCTTTGTTCTTGGC  
 444▶ S S T G I R V V K T C I P Q T L E V L D V S N N N L D S F S L F L P

**BspHI (2077)**

2001 TCGGCTGCAAGAGCTCTATATTTCCAGAAATAAGCTGAAAACACTCCAGATGCTTCTGTTCCCTGTGTTGCTGGTTCATGAAAATCAGAGAGAATGCA  
 477▶ R L Q E L Y I S R N K L K T L P D A S L F P V L L V M K I R E N A

**Scal (2103)**

2101 GTAAGTACTTCTCTAAAGACCAACTTGGTCTTTTCCAAACTGGAGACTCTGGAAGCAGGCACAACACTTTGTTGCTCCTGCGAAGTCTATCTCT  
 511▶ V S T F S K D Q L G S F P K L E T L E A G D N H F V C S C E L L S  
 2201 TTACTATGGAGAGCCAGCTCTGGCTCAAACTCTGGTGTGACTGGCCAGACGACTGTGTGACTCTCCGCTCGCTGCACGGCCACAGGCTTCAGGA  
 544▶ F T M E T P A L A Q I L V D V P D S Y L C D S P P R L H G H R L Q D  
 2301 TGCCCCGCCCTCCGCTTGGAAATGTCACAGGCTGCACTGGTGTGAGTCTGCTGTCCTTCTCCTGTTGATCTTGTCTGAGTGGCCCTGTGCCAC  
 577▶ A R P S V L E C H Q A A L V S G V C C A L L L I L L V G A L C H

**PstI (2474)**

**SdaI (2473)**

**SbfI (2473)**

2401 CATTCCACGGACTGGTACCTGAGAATGATGGCGTGGCTCCAGCCAAAGAGGAAAGCCAAAGAAAGCTCCCTGCAGGGACGTTTGTATGATGCCT  
 611▶ H F H G L W Y L R M M W A W L Q A K R K P K K A P C R D V C Y D A  
 2501 TTGTTTCTACAGTGAAGGATTCCTTGGTGGAGAACCTCATGGTCCAGCAGCTGGAGAAGTCTGACCCGCCCTTTAAGCTGTGTCTCCACAAGCG  
 644▶ F V S Y S E Q D S H W V E N L M V Q Q L E N S D P P F K L C L H K R

**ClaI (2637)**

**BsiWI (2690)**

2601 GGACTTCGTTCCGGCAAAATGGATCATTGACAACATCATCGATTCATCGAAAAGAGCCACAAAAGTGTGTTGCTGTTTCTGAGAAGTCTGACGGAGC  
 677▶ D F V P G K W I I D N I I D S I E K S H K T V F V L S E N F V R S  
 2701 GAGTGGTGAAGTACGAAGTGAAGTCTCCACTTCAGGCTCTTGGACGAGAACAACGACGCGCCATCCTGTTTGTGGAGCCATTGAGAGGAAAG  
 711▶ E W C K Y E L D F S H F R L F D E N N D A A I L V L L E P I E R K

**Eco47III (2809) FspI (2824)**  
 2801 CCATCCCCAGCGCTTCTGCAAACGCGCAAGATAATGAACACCAAGACCTACCTGGAGTGGCCCTTGGATGAAGGCCAGCAGGAAGTGTTTTGGGTAAA  
 744 ▶ A I P Q R F C K L R K I M N T K T Y L E W P L D E G Q Q E V F W V N

**NheI (2959)**  
 2901 TCTGAGAACTGCAATAAAGTCCAGATCCTACCCCTATGATGTGCCAGACTACGCCCTAAAGCTAGCTGGCCAGACATGATAAGATACATTGATGAGTTGG  
 777 ▶ L R T A I K S R S Y P Y D V P D Y A •

**HpaI (3097)**  
 3001 ACAAACCACAAC TAGAATGCAGTGAAAAAATGCTTTATTTGTGAAATTTGTGATGCTATTGCTTTATTGTAACCATTATAAGCTGCAATAAACAAGTT

**MfeI (3108) EcoRI (3193)**  
 3101 AACAAACAACAATTGCATTTATTTATGTTTCAGGTTTCAGGGGGAGGTGTGGGAGGTTTTTAAAGCAAGTAAACCTCTACAAATGTGGTATGGAAATCT

3201 AAAATACAGCATAGCAAAACTTTAACTCCAATCAAGCCTCTACTTGAATCCTTTTCTGAGGGATGAATAAGGCATAGGCATCAGGGGCTGTTGCCAAT

3301 GTGCATTAGCTGTTTGCAGCCTCACCTTTTCATGGAGTTAAGATATAGTGTATTTCCCAAGGTTTGAAGTACTGCTTCATTTCTTTATGTTTTAAA

**SspI (3432) SmaI (3446)**  
 3401 TGCAGTACCTCCACATTCCTTTTAGTAAAATATTAGAAAATAATTTAAATACATCATTGCAATGAAAAATAATGTTTTTTATTAGGCAGAATCCAG

**EcoO109I (3507)**  
 3501 ATGCTCAAGGCCCTTCATAATATCCCCAGTTTAGTAGTTGGACTTAGGGAACAAGGAACCTTTAATAGAAATGGACAGCAAGAAAGCGAGCTTCTAG

3601 CTTTAGTTCCTGGTGTACTTGAGGGGGATGAGTTCCTCAATGGTGGTTTTGACCAGCTTGCCATTCTCAATGAGCACAAGCAGTCAGGAGCATAGT  
 141 ◀ • N R T Y K L P I L E E I T T K V L K G N M E I L V F C D P A Y D

**BstXI (3736)**  
 3701 CAGAGATGAGCTCTGACATGCCACAGGGGCTGACCACCTGATGGATCTGTCCACCTCATCAGAGTAGGGGTGCCTGACAGCCACAATGGTGTCAAA  
 108 ◀ S I L E R C M G C P S V V R I S R D V E D S Y P H R V A V I T D F

**StuI (3871)**  
 3801 GTCCTTCTGCCGTTGCTCAGCAGACCAATGGCAATGGCTTCAGCACAGACAGTACCCTGCCAATGTAGGCCTCAATGTGGACAGCAGAGATGATC  
 75 ◀ D K Q G N S V A S G I A I A E A C V T V R G I Y A E I H V A S I I

3901 TCCCCAGCTTGGTCTGATGGCCGCCCGCAGATGGTCTGTGTCTCATAGACATGGTGTATCTCAGTGGCGACCTCCACAGCTCCAGATCCT  
 41 ◀ E G T K T R I A A G V H H K N D E Y L M T I K E T A V E V L E L D Q

**BspHI (4021)**  
**XmnI (4013) AseI (4079)**  
 4001 GCTGAGAGATGTTGAAGTCTTCATGATGGCCCTCTATAGTGAGTCGATTATACTATGCCGATATACTATGCCGATGATTAATTGTCAAACAGCGTG  
 8 ◀ Q S I N F T K M

4101 GATGGCGTCTCAGCTTATCTGACGGTCTACTAAACGAGCTCTGTTATATAGACCTCCACCGTACACGCCTACCGCCATTGCGTCAATGGGGCGGA

**SpeI (4234)**  
 4201 GTTGTACGACATTTTGGAAAGTCCCGTGTGATTTACTAGTCAAACAACCTCCATTGACGTCAATGGGGTGGAGACTTGGAAATCCCGTGTGAGTCAAAC

**SnaBI (4362)**  
 4301 CGCTATCCACGCCATTGATGTAAGTCCCAACCGCATCATCATGGTAATAGCGATGACTAATACGTAGATGACTGCCAAGTAGGAAAGTCCCATAAAG

**NdeI (4467)**  
 4401 TCATGTAAGTGGCATAATGCCAGGCGGCCATTACCGTATTGACGTCAATAGGGGGCTACTTGGCATATGATACACTTGTACTGCAAGTGGGG  
 4501 AGTTTACCGTAAATACTCCACCCATTGACGTCAATGAAAGTCCCTATTGGCGTTACTATGGGAACATACGTATTATTGACGTCAATGGGCGGGGGTGG

**PaeI (4653)**  
**PstI (4646)**  
**SdaI (4645)**  
**SbfI (4645)**  
**PciI (4663)**  
**BspLUIII (4663)**  
 4601 TTGGGCGGTGAGCCAGGCGGGCCATTACCGTAAGTTATGTAACGCCTGCAGGTTAATTAAGAACATGTGAGCAAAGGCCAGCAAAGGCCAGGAACCG  
 4701 TAAAAAGGCCGCTTGTGCGGTTTTCCATAGGCTCCGCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAAGGTGGCGAAACCCGACAGGA  
 4801 CTATAAAGATACCAGGCGTTTCCCTGGAAGCTCCCTCGTGGCTCTCTGTTCCGACCTGCCGCTTACCGGATACCTGTCCGCTTTCTCCCTTCGG

**ApaLI (4977)**  
 4901 GAAGCGTGGCGCTTCTCATAGCTCAGCTGTAGGTATCTCAGTTCGGTGTAGGTGTTTCGCTCAAGCTGGGCTGTGTGCACGAAACCCCGTTCAGCC  
 5001 CGACCGTGGCGCTTATCCGTAACACTGCTTGTAGTCCAACCCGTAAGACAGCACTTATCGCACTGGCAGCAGCACTGGTAACAGGATTAGCAGA  
 5101 GCGAGGTATGTAGGCGGTGCTACAGAGTCTTGAAGTGGTGGCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAG  
 5201 TTACCTTCGAAAAAGAGTTGGTAGCTTGTGATCCGGCAAAACCAACCCGCTGGTAGCGGTGGTTTTTTGTTTGAAGCAGCAGATTACCGCAGAAA

**PaeI (5393)**  
 5301 AAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGTCTGACGCTCAGTGAACGAAAACCTCACGTTAAGGGATTTTGGTCATGGCTAGTTAATTA

**EagI (5413)**  
**SwaI (5402) NotI (5412)**  
 5401 ACATTTAAATCAGCGGCGCAATAAAAATCTTTATTTTTCATTACATCTGTGTGTTGTTTTTGTGTGAATCGTAACTAACATACGCTCTCCATCAAAA  
 5501 CAAAACGAAACAAAACAACTAGCAAAATAGGCTGTCCCGTGAAGTGCAGGTGCCAGAACATTTCTCTATCGAA